

EPA CLEANUP GRANT APPLICATION CLIFFS-DOW SITE



City of Marquette

Community Meeting
November 10, 2022



SUMMARY

- The production of charcoal pig iron, acetic acid and methanol from wood at the Cliffs-Dow site resulted in waste and by-products that contaminated soil and groundwater with Volatile Organic Compounds (VOCs) and Semi-Volatile Organics Compounds (SVOCs).
- The City of Marquette acquired the property in 1997 and has been addressing legacy contamination from past industrial operations.
- Limited contaminated source material was removed from the site in 2011.
- The contaminated groundwater plume has been monitored by the City up to the Lake Superior shoreline.
- The proposed approach is to inject chemical oxidants into the groundwater plume to degrade the contamination.
- The City is applying for an EPA Brownfield Cleanup Grant to provide significant funding for the remediation.



CLIFFS-DOW

- 1902** Cleveland-Cliffs Iron Company Develops Property
- 1902 - 1930** Pig Iron Produced on Property
- 1935** Cliffs-Dow Chemical Company Created
- 1935 - 1968** Cliffs-Dow Produces Wood Chemicals
- 1968** Cliffs-Dow Company shares sold to Georgia-Pacific and E.L. Bruce





CLIFFS-DOW SITE HISTORY

- 1902** Cleveland-Cliffs Iron Company Develops Property
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- 1968** Cliffs-Dow Company shares sold to Georgia-Pacific and E.L. Bruce
- 1969** Site Operations Cease – Sold to C & W Corporation; various owners
- 1997** City acquires property for redevelopment



CITY'S ENVIRONMENTAL RESPONSE

- City has been working with the Michigan Department of Environment, Great Lakes and Energy (EGLE) – formerly MDEQ – to assess soil and groundwater contamination.
- Geophysical survey and test pitting to investigate subsurface sources
- Tar material (845 tons) was excavated and removed in 2011.
- Focus has been on groundwater monitoring and migration towards Lake Superior.

CLIFFS DOW GROUNDWATER CONTAMINATION

- Key consideration is Groundwater / Surfacewater Interface (GSI)
- Most recent groundwater monitoring shows exceedances of GSI Criteria
- Remediation is a viable response activity.





REMEDIATION OPTIONS

- Additional Excavation and Landfill Disposal (Limited Source Area Removal)
- Air Sparging with Soil Vapor Extraction
- Groundwater Pump and Treat
- Non-Permeable Barrier (slurry wall)
- Permeable Reactive Barrier (Sheet Piling Treatment Zone)
- In-Situ Bioremediation
- Groundwater Monitoring



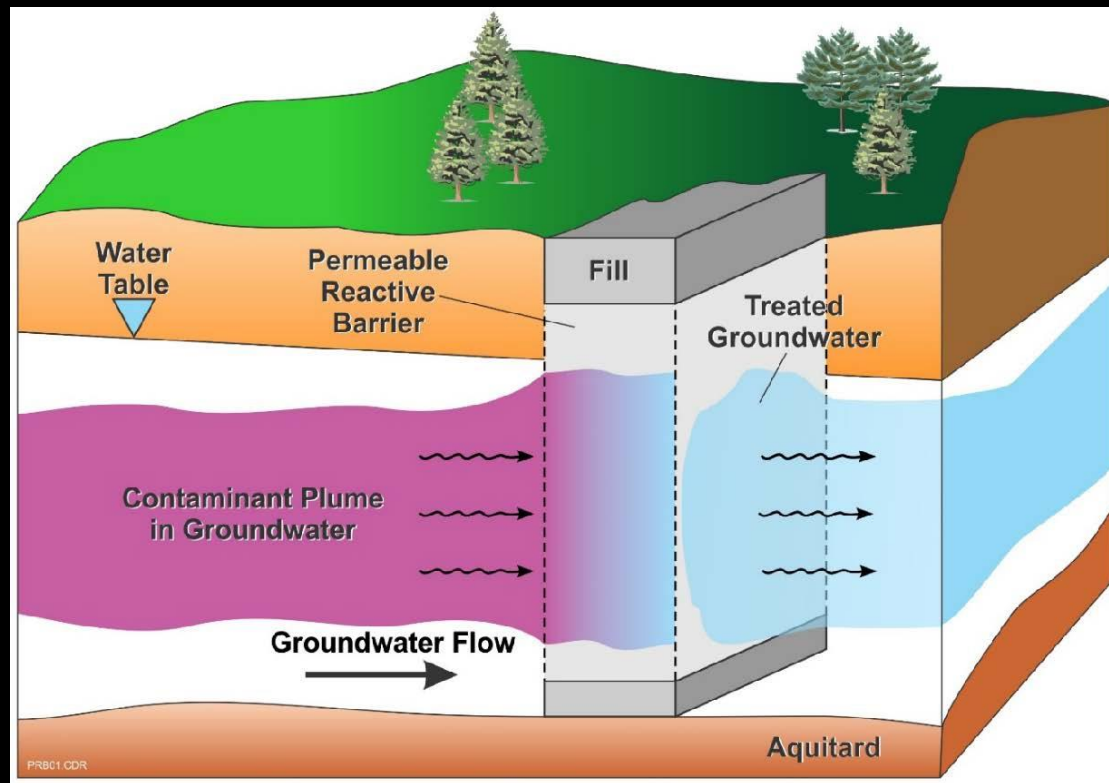
ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

- No Action
- Permeable Reactive Barrier (Sheet Piling Treatment Zone)
- In-Situ Chemical Oxidation (ISCO)



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

- Permeable Reactive Barrier (Sheet Piling Treatment Zone)





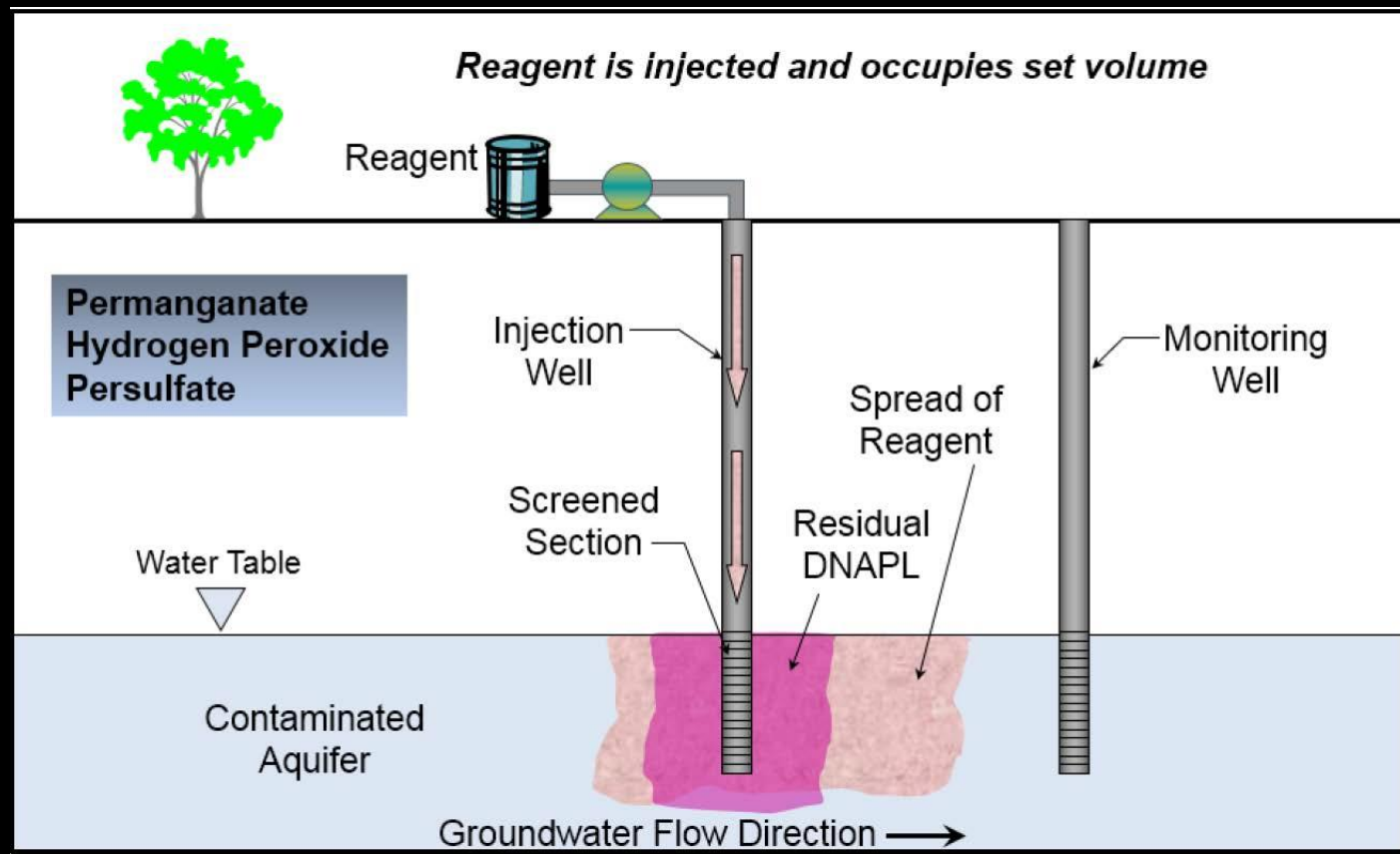
ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

- Permeable Reactive Barrier (Sheet Piling Treatment Zone)
 - Installation of a barrier that combines treatment with restricted groundwater flow
 - Requires that the reactive media in the barrier be regularly replenished
 - Needs have a natural impermeable bottom
 - Higher cost than ISCO



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

- In-Situ Chemical Oxidation (ISCO)





ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

- In-Situ Chemical Oxidation (ISCO)
 - Injection of chemical oxidants that break down hazardous compounds into non-hazardous or inert compounds.
 - Most appropriate for compounds of concern – VOCs, SVOCs, Dense Non-Aqueous Phase Liquids (DNAPL).
 - Adaptable and flexible
 - Rapid Treatment; Doesn't generate large volumes of waste.
 - Simple, readily available, lower cost



EPA CLEANUP GRANT

- EPA Brownfields Program provides funding to communities for assessment and cleanup.
- Cleanup grant provides funding for remediation on publicly owned property.
- Bipartisan Infrastructure Law means additional funding for FY 2023 and waiver of customary 20% cost share.
- Extensive application process; applications due November 22nd for FY 2023 grants.
- Community involvement is sought



EPA CLEANUP GRANT DOCUMENTS

- Narrative Application
- Threshold Criteria
- Analysis of Brownfield Cleanup Alternatives
- Federal Forms



Questions and Comments